

IN THE CLAIMS

1. An image data processing apparatus which processes image data representing a multi-tone image, said image data processing apparatus comprising:

5 a generating device adapted to generate code data regarding said multi-tone image; and

a synthesizing device adapted to synthesize said code data with said image data by embedding said code data into an image portion of said image data so as to generate synthesized image data,

10 wherein a synthesized image reproduced from said synthesized image data is substantially identical to said multi-tone image representative of said image data.

2. An image data processing apparatus in accordance with claim 1,

wherein said synthesizing device embeds said code data into a contour of said synthesized image.

3. An image data processing apparatus in accordance with claim 2,

wherein said code data represents said contour of said synthesized image.

4. An image data processing apparatus in accordance with claim 1,

5 wherein said synthesizing device embeds said code data by changing density levels of pixels of said image data where said code data is embedded.

5. An image data processing apparatus in accordance with claim 1,

wherein said synthesizing device is adapted to embed said code data by changing density levels of pixels of said image data located around a pixel of said image data where said code data is embedded.

6. An image data processing apparatus which is capable of processing image data representing an image, said image data processing apparatus comprising:

an extracting device adapted to extract additional data embedded in said image data;

a processing device adapted to process said additional data extracted by said extracting device independent of said image data; and

a synthesizing device adapted to synthesize said additional data which has been processed by said processing device with said image data so as to generate synthesized image data,

wherein a synthesized image reproduced from said synthesized image data is substantially identical to said image representative of said image data.

7. An image data processing apparatus in accordance with claim 6,

wherein said additional data is embedded into a contour of said synthesized image.

8. An image data processing apparatus in accordance with claim 7,

wherein said additional data represents said contour of said synthesized image.

9. An image data processing apparatus in accordance with claim 6,

wherein said additional data is embedded into an image portion of said image data by changing density

5 levels of pixels of said image data located around a pixel of said image data where said additional data is embedded.

10. An image data processing apparatus in accordance with claim 6,

wherein said additional data is embedded into an image portion of said image data by changing density
5 levels of pixels of said image data located around a pixel of said image data where said additional data is embedded.

11. An image data processing apparatus in accordance with claim 6,

wherein said processing device generates new additional data based on said additional data extracted by said extracting device, and said synthesizing device
5 embeds said new additional data into said synthesized image.

12. An image data processing apparatus in accordance with claim 6,

wherein said processing device is adapted to generate lacking additional data when said additional
5 data extracted by said extracting device is inadequate, and said synthesizing device embeds said generated lacking additional data into said synthesized image.

13. A data processing apparatus which is adapted to process data representing analog information, said data processing apparatus comprising:

a generating device adapted to generate code data
5 regarding said analog information representative of said data; and

a synthesizing device adapted to synthesize said code data with said data by embedding said code data into a content portion of said data, and said
10 synthesizing device being further adapted to generate synthesized data,

wherein an analog information reproduced from said synthesized data is identical to said analog information representative of said data.

14. A data processing apparatus in accordance with claim 13,

wherein said data represents an image as said analog information and said content portion of said
5 data corresponds to an image portion.

15. A data processing apparatus in accordance with claim 13,

wherein said synthesizing device embeds said code data by changing signal levels of said data
5 representing said analog information.

16. An image data processing apparatus adapted to receive code data and analyze said received code data to generate image data, said image data processing apparatus comprising:

5 an analyzer adapted to analyze said received code data to generate said image data;

a generator adapted to generate additional data based on said received code data; and

a synthesizer adapted to synthesize said
10 additional data with said image data and to output said synthesized data.

17. An image data processing apparatus in accordance with claim 16,

wherein said generator obtains coordinate information from the received code data and generates additional data based on said coordinate information.

18. An image data processing apparatus as claimed in claim 17,

wherein said received code data is outline font data representing contours of characters.

19. An image data processing method for processing image data representing a multi-tone image, said method comprising the steps of:

generating code data regarding said multi-tone image; and

synthesizing said code data with said image data by embedding said code data into an image portion of said image data and generating synthesized image data,

wherein an image reproduced from said synthesized image data is substantially identical to said multi-tone image representative of said image data.

20. An image data processing method in accordance with claim 19,

wherein said code data is embedded into a contour of the images.

21. An image data processing method in accordance with claim 20,

wherein said code data represents said contour of said image.

22. An image data processing method in accordance with claim 19,

wherein said code data is embedded by changing density levels of pixels of said image data where said code data is embedded.

23. An image data processing method in accordance with claim 19,

wherein said code data is embedded by changing density levels of pixels of said image data located around a pixel of said image data where said code data is embedded.

24. An image data processing method for processing image data representing an image, said image data processing method comprising steps of:

extracting additional data embedded in said image data;

processing said additional data extracted by said extracting device; and

synthesizing said additional image data which has been processed by said processing step with said image data and generating synthesized image data,

wherein a synthesized image produced from said synthesized image data is substantially identical to said image representative of said image data.

25. An image data processing method in accordance with claim 24,

wherein said additional data is embedded into a contour of said synthesized image.

26. An image data processing method in accordance with claim 25,

wherein said additional data represents said contour of said synthesized image.

27. An image data processing method in accordance with claim 24,

wherein said additional data is embedded into an image portion of the image data by changing density
5 levels of pixels of said image data where said additional data is embedded.

28. An image data processing method in accordance with claim 24,

wherein said additional data is embedded into an image portion of said image data by changing density
5 levels of pixels of said image data located around a pixel of said image data where the additional data is embedded.

29. An image data processing method in accordance with claim 24,

wherein said processing step generates new additional data based on the additional data extracted
5 in said extracting step, and said synthesizing step embeds said new additional data into said synthesized image.

30. An image data processing method in accordance with claim 24,

wherein said processing step generates lacking additional data when said data extracted by said
5 extracting step is inadequate, and said synthesizing step embeds said generated lacking additional information into said synthesized image.

31. A data processing method for processing data representing analog information, said data processing method comprising the steps of:

generating code data regarding said analog
5 information representative of said data; and
synthesizing said code data with said data by
embedding said code data into a content portion of said
data to generate synthesized data,
10 wherein synthesized analog information reproduced
from said synthesized data is substantially identical
to said analog image representative of said data.

32. A data processing method in accordance with
claim 31,
wherein said data represents an image as said
analog information and said content portion of said
5 data corresponds to an image portion.

33. A data processing method in accordance with
claim 31,
wherein said synthesizing step embeds said code
data by changing signal levels of said data
5 representing said analog information.

34. An image data processing method comprising
the steps of:
receiving code data;
analyzing said received code data to generate said
5 image data;
generating additional data based on said received
code data; and
synthesizing said additional data with said image
data and outputting said synthesized data.

35. An image data processing method in accordance
with claim 34,
wherein said generating step includes: obtaining
coordinate information from said received code data and

5 generating additional data based on said coordinate
information.

36. An image data processing method as claimed in
claim 35,

wherein said code data is outline font data
representing character contours.